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| 10/674,669 | 09/30/2003 | Mario Elmen Tremblay | 8598MR | 5011 |

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THE PROCTER & GAMBLE COMPANY
Global Legal Department - IP
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| EXAMINER | |
|---|---|
| ZHENG, LOIS L | |
| ART UNIT | PAPER NUMBER |
| 1733 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/674,669 | TREMBLAY ET AL. | |
| | Examiner | Art Unit | |
| | LOIS ZHENG | 1733 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 June 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 June 2011 has been entered.

### *Status of Claims*

2. Claim 17 is amended in view of applicant's response filed 21 June 2011. Claims 1-16 and 18-20 are canceled. Therefore, claim 17 is currently under examination.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckley et al. US 6,632,347 B1(Buckley) in view of Kaczur et al. US 5,106,465 (Kaczur), and further in view of Capuano et al. US 4,542,008(Capurano).

Buckley teaches an electrochemical apparatus comprising a concentrated salt solution tank(i.e. reservoir) that supplies concentrated salt solution to process water stream to locally form the electrolyte feed solution to the electrolyzer(Fig. 2 #20, col. 19

line 64 - col. 20 line 49). Buckley further teaches using a peristaltic pump for pumping the concentrated salt solution to the process water stream forming feed stream to the electrolyzer(col. 20 lines 41-45, Fig. 2). Buckley's electrolyzer comprise an anode, a cathode, a porous ceramic semi-permeable separator(i.e. non-conducting porous flow barrier) separating the anode and the cathode, an inlet for receiving the feed solution and an outlet for discharging effluent(col. 14 lines 34-41). The electrolyzer of Buckley further comprises a passage of feed solution adjacent to the anode and an electric current supply providing current to the electrolysis cell.

Regarding claim 17, Buckley teaches that is porous ceramic semi-permeable separator can be used as an alternative to an ion-selective membrane(col. 14 lines 34-65). Therefore, the examiner concludes that Buckley's is porous ceramic semi-permeable separator is not ion-selective membrane and an embodiment of Buckley's teaching is a non-membrane electrolysis cell as claimed(i.e. an electrolysis cell without an ion-selective membrane). The porous ceramic semi-permeable separator as taught by Buckley reads on the claimed non-conducting porous flow barrier. Buckley further teaches that its anode is a titanium anode(col. 14 lines 25-27).

In addition, the claimed halogen dioxide feed solution and the halogen dioxide salt are directed to material being worked on by the claimed apparatus, therefore, do not render the instant apparatus claims patentable. See MPEP 2115.

However, Buckley does not explicitly teach that the metal anode is porous. Buckley also does not explicitly teach the claimed passing of at least a portion of the

feed solution through a salt chamber comprising a slow dissolving salt tablet to provide controlled release of the salt.

Kaczur also teaches an electrolytic cell for the generation of chlorine dioxide (abstract). Kaczur further teaches the use of a porous platinum coated titanium anode(col. 4 lines 41-63).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous platinum coated titanium anode of Kaczur into the electrolytic apparatus of Buckley in order to utilize the high surface contact area due to the porosity of the anode and achieve high corrosion resistance as taught by Kaczur (col. 4 lines 44-45 and 57-60).

The porous anode of Buckley in view of Kaczur comprises a plurality of porous flow passages through which at least a portion of the aqueous feed solution flows. In addition, since the direction of electricity in the electrolysis cell of Buckley travels horizontally between the anode and the cathode chamber(Fig. 2 #62,64), the inlet to the electrolysis cell locates at the bottom of the electrolysis cell and the outlet locates at the top of the electrolysis cell, the examiner concludes that the electrolyte electrolysis cell of Buckley in view of Kaczur flows in a cross direction to the flow of electricity between the anode and cathode chambers as claimed. Buckley further teaches claimed return passage for recycling of feed as claimed (Fig. 2 # 126, col. 24 lines 4-10).

Capuano teaches an electrochemical chlorine dioxide generation process wherein the chlorine dioxide containing process solution can be resaturated by passing through a resaturator containing chlorine dioxide salt such as $NaClO_2$ in the form of

tablets(col. 5 lines 55-68). Capuano further teaches that such a resaturation system allows the production of resaturated solution having accurately controlled chlorite concentration(col. 5 lines 62-67).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the solution resaturation system as taught by Capuano into the feeding system in the electrolysis cell of Buckley in view of Kaczur in order to achieve accurate control of chlorite concentration as taught by Capuano.

Additionally, the claimed halogen dioxide salt concentration in the feed solution is directed to a process limitation while the instant claim is directed to an apparatus, therefore, does not render the instant claim patentable. As stated in MPEP 2114 [R-1], it is well settled that the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus as long as the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Furthermore, regarding the claimed slow dissolving tablet of halogen dioxide salt “comprising a mixture of said halogen dioxide salt and a dissolution control agent" and the actual types of dissolution control agent, these limitations are directed to materials that are precursors used to prepare the electrolyte, which is the material being worked on by the claimed apparatus. It is well settled that material worked upon by a structure being claimed does not render the instant apparatus claim patentable. See MPEP 2115.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley US 6,306,281 B1(Kelley) in view of Capuano, and further in view of Buckley, and further in view of Kaczur.

Kelley teaches an electrolytic apparatus for the generation of chlorine dioxide(abstract). The apparatus comprises an aqueous sodium chlorite feed solution(col. 2 lines 55-61), a non-membrane electrolysis cell comprising an anode, a cathode, an inlet, an outlet(Fig. 1) and a power source connected to the anode and the cathode(col. 3 lines 18-21), thereby providing current through the aqueous feed solution.

Regarding claim 17, the inlet and the gap between the anode and the cathode of Kelley reads on the claimed passage for the feed solution adjacent to the anode. The inlet in the electrolytic apparatus of Kelley is capable of receiving aqueous feed solution stream and the outlet in the apparatus of Kelly is capable of discharging halogen dioxide containing effluent as claimed.

In addition, the claimed halogen dioxide feed solution is directed to a material that is worked on by the instantly claimed apparatus. As stated in MPEP 2115, it is well settled that "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d *>996<, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

However, Kelley does not explicitly teach that the claimed means for delivering halogen dioxide salt directed to an aqueous feed solution inlet stream to locally form the

aqueous halogen dioxide feed solution or that such means comprises a halogen dioxide salt chamber comprising a slot dissolving tablet of halogen dioxide salt to provide controlled release of the slat by passing at least a portion of the feed solution through the salt chamber.

Capuano teaches an electrochemical chlorine dioxide generation process wherein the chlorine dioxide containing process solution can be resaturated by passing through a resaturator containing chlorine dioxide salt such as $NaClO_2$ in the form of tablets(col. 5 lines 55-68). Capuano further teaches that such a resaturation system allows the production of resaturated solution having accurately controlled chlorite concentration(col. 5 lines 62-67).

It would have been obvious to one of ordinary skill in the art to have incorporated the solution resaturation system as taught by Capuano into the feeding system in the electrolysis cell of Kelley in order to achieve accurate control of chlorite concentration as taught by Capuano.

Therefore, the apparatus of Kelley in view of Capuano comprises the claimed means for delivering halogen dioxide salt directly into an aqueous feed solution inlet stream to locally form the aqueous feed solution as claimed. In addition, since the apparatus of Kelley in view of Capuano is structurally the same as the claimed halogen dioxide generating system, one of ordinary skill in the art would have found it obvious that the apparatus of Kelley in view of Capuano is capable of consume power at about one Watt or less as claimed.

However, Kelley in view of Capuano do not explicitly teach the claimed non-conducting porous flow barrier.

The teachings of Buckley are discussed in paragraph 4 above.

Buckley further teaches that a semi-permeable porous ceramic separator (i.e. non-conducting porous flow barrier) is placed between the anode and cathode of the electrolysis cell in order to achieve an adequate flow of solution between the anode and the cathode chambers to provide acceptable electrical resistance while being sufficiently non-permeable to prevent gross mixing of anolyte and catholyte (col. 24 lines 44-65). Buckley further teaches the claimed return passage for returning the depleted effluent back to the source(Fig. 2 # 126).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous ceramic separator (i.e. non-conducting porous flow barrier) as taught by Buckley into the electrolytic cell of Kelley in view of Capuano in order to achieve an adequate flow of solution between the anode and the cathode chambers to provide acceptable electrical resistance while being sufficiently non-permeable to prevent gross mixing of anolyte and catholyte as taught by Buckley. In addition, one of ordinary skill in the art would also have found it obvious to incorporate the return passage for depleted effluent back to feed stream as taught by Buckley into the apparatus of Kelley in view of Capuano in order to reduce operating cost and increase efficiency by recycling electrolyte.

Therefore, the porous ceramic separator in the apparatus of Kelley in view of Capuano and Buckley reads on the claimed non-conducting porous flow barrier. In

addition, the apparatus of Kelley in view of Capuano and Buckley comprises the claimed passage.

However, Kelley in view of Capuano and Buckley do not explicitly teach that the metal anode is porous.

Kaczur also teaches an electrolytic cell for the generation of chlorine dioxide (abstract). Kaczur further teaches the use of a porous platinum coated titanium anode(col. 4 lines 41-63).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous platinum coated titanium anode of Kaczur into the electrolytic apparatus of Kelley in view of Capuano and Buckley in order to utilize the high surface contact area due to the porosity of the anode and achieve high corrosion resistance as taught by Kaczur (col. 4 lines 44-45 and 57-60).

In addition, the porous anode of Kelly in view of Capuano, Buckley and Kaczur is capable of allow at least a portion of the aqueous feed solution flows in a cross direction to a flow of electricity between the anode and the cathode as claimed. Furthermore, the porous ceramic separator as taught by Kelly in view of Capuano, Buckley and Kaczur is non-conductive and is capable of restricting flow of the electrolyte solution in a cross direction to the flow of electricity between the anode and the cathode as claimed.

Furthermore, the claimed halogen dioxide salt concentration in the feed solution is directed to a process limitation while the instant claim is directed to an apparatus, therefore, does not render the instant claim patentable. As stated in MPEP 2114 [R-1], it is well settled that the manner in which a claimed apparatus is intended to be

employed does not differentiate the claimed apparatus from a prior art apparatus as long as the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Furthermore, regarding the claimed slow dissolving tablet of halogen dioxide salt “comprising a mixture of said halogen dioxide salt and a dissolution control agent" and the actual types of dissolution control agent, these limitations are directed to materials that are precursors used to prepare the electrolyte, which is the material being worked on by the claimed apparatus. It is well settled that material worked upon by a structure being claimed does not render the instant apparatus claim patentable. See MPEP 2115.

**NOTE: Although the examiner maintains that the teachings from above combined references are sufficient to form proper rejections for instant claim 17, the examiner is providing following alternative rejections to show that the claimed dissolution control agent is well know in the art.**

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckley et al. US 6,632,347 B1(Buckley) in view of Kaczur et al. US 5,106,465 (Kaczur), and further in view of Capuano et al. US 4,542,008(Capurano), and further in view of Hei et al. US 6,663,902 B1(Hei).

The teachings of Buckley in view of Kaczur and Capuano are discussed in paragraph 4 above.

However, Buckley in view of Kaczur and Capuano do not explicitly teach the claimed dissolution control agent.

Hei teaches sustained release agents such as waxes can be used in a chlorine dioxide generation process in order to regulate the rate of chlorine dioxide generation (col. 11 lines 29-33 and 35-36).

Therefore, it would have been obvious to have incorporated sustained release agents such as waxes as taught by Hei into the apparatus of Buckley in view of Kaczur and Capuano in order to regulate the rate of chlorine dioxide generation as taught by Hei.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley US 6,306,281 B1(Kelley) in view of Capuano, and further in view of Buckley, and further in view of Kaczur, and further in view of Hei.

The teachings of Kelley in view of Capuano, Buckley and Kaczur are discussed in paragraph 5 above.

However, Kelley in view of Capuano, Buckley and Kaczur do not explicitly teach the claimed dissolution control agent.

Hei teaches sustained release agents such as waxes can be used in a chlorine dioxide generation process in order to regulate the rate of chlorine dioxide generation (col. 11 lines 29-33 and 35-36).

Therefore, it would have been obvious to have incorporated sustained release agents such as waxes as taught by Hei into the apparatus of Kelley in view of Capuano, Buckley and Kaczur in order to regulate the rate of chlorine dioxide generation as taught by Hei.

## *Response to Arguments*

8. Applicant's arguments filed 21 June 2011 have been fully considered but they are not persuasive.

In the remarks, applicant argues that the slow dissolving tablet is part of the claimed apparatus.

The examiner does not find applicant's argument convincing because the slow dissolving tablet is the precursor used to produce the electrolyte to be worked on by the claimed apparatus, therefore, is still considered part of the electrolyte, which is materially to be worked on my the claimed apparatus. In addition, the claimed slow dissolving tablet does not provide unique structure limitations that differentiate the claimed apparatus from the apparatus of the prior art references. Therefore, the examiner maintains that the rejections are proper.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lois Zheng/
Patent Examiner
AU1733